

## AMENDMENTS TO THE CLAIMS

Claims 1-29 (Previously withdrawn)

Sub DI  
C/

30. (Currently amended) A machine readable storage medium comprising a program containing a set of instructions for causing a cell screening system to execute procedures for detecting the distribution of one or more cellular macromolecule of interest between two or more different cellular compartments on and/or in individual cells comprising:

a) scanning multiple cells in an array of locations which contain multiple cells to obtain fluorescent signals from fluorescent reporter molecules on and/or in the cells, wherein the cells possess a plurality of fluorescent reporter molecules, wherein the plurality of fluorescent reporter molecules comprises one or more fluorescent reporter molecules [at least a first fluorescent reporter molecule to identify individual cells, at least a second fluorescent reporter molecule] to report on

(i) one or more cellular macromolecule of interest[, at least a third fluorescent reporter molecule to report on one of the two or more cellular compartments on and/or in the individual cells, and optionally an at least fourth fluorescent reporter molecule to report on one of the two or more cellular compartments on and/or in the individual cells; wherein the fluorescent signals from the at least first fluorescent reporter molecule, the at least second fluorescent reporter molecule, the at least third fluorescent reporter molecule, and the at least fourth fluorescent reporter molecule are optically distinguishable]; and

(ii) two or more cellular compartments of interest on and/or in the individual cells; wherein the two or more cellular compartments of interest include at least one cellular compartment selected from the group consisting of a cell membrane, an endoplasmic reticulum, and a Golgi apparatus;

b) identifying individual cells from the fluorescent signals from the plurality of fluorescent reporter molecules [at least first fluorescent reporter molecule];

c) creating a mask of each of the two or more cellular compartments of interest on and/or in the individual cells from the fluorescent signals from the **plurality of fluorescent reporter molecules**~~[at least first fluorescent reporter molecule, the at least second fluorescent reporter molecule, the at least third fluorescent reporter molecule, and/or the at least fourth fluorescent reporter molecule]~~; **wherein the creating a mask of each of the two or more cellular compartments of interest comprises creating a mask of one or more cellular compartments selected from the group consisting of the cell membrane, the endoplasmic reticulum, and the Golgi apparatus;**

d) determining an intensity of the fluorescent signals from the **fluorescent reporter molecules that report on the one or more cellular macromolecule of interest** ~~[at least second fluorescent reporter molecule]~~ within the mask of each of the two or more cellular compartments of interest on and/or in the individual cells in response to contacting the cells with a test stimulus;

e) comparing the intensity of the fluorescent signals from the **fluorescent reporter molecules that report on the one or more cellular macromolecule of interest** ~~[at least second fluorescent reporter molecule]~~ within the mask of each of the two or more cellular compartments of interest on and/or in the individual cells in response to contacting the cells at a first time point with a test stimulus to:

i) an intensity of fluorescent signals **from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest**~~[of the at least second fluorescent reporter molecule]~~ within the mask of each of the two or more cellular compartments of interest on and/or in the individual cells in response to contacting the cells with the test stimulus from at least a second time point; and/or

ii) an intensity of fluorescent signals from the **fluorescent reporter molecules that report on the one or more cellular macromolecule of interest** ~~[at least second fluorescent reporter molecule]~~ within the mask of each of the two or more cellular compartments of interest on and/or in the individual cells that have not been contacted with the test stimulus; and

f) determining the effect of the test stimulus on the distribution of the one or more cellular macromolecule of interest between the two or more different cellular compartments on and/or in the individual cells as a function of the intensity of the fluorescent signals ~~[of the at~~

C1  
~~least second fluorescent reporter molecule]~~ from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest within the mask of each of the two or more cellular compartments of interest on and/or in the individual cells in response to the test stimulus.

Claims 31-43 (Previously withdrawn)

C2  
44. (Currently amended) The machine readable storage medium of claim 30, wherein the ~~[at least first fluorescent reporter molecule identifies nuclei, and wherein the]~~ identifying of the individual cells comprises identifying the nucleus of the individual cells.

45. (Currently amended) The machine readable storage medium of claim ~~[44]~~ 30, wherein the creating a mask of each of the two or more cellular compartments of interest on and/or in the individual cells comprises creating a cytoplasmic mask from the fluorescent signals from the fluorescent reporter molecules that report on each of the two or more cellular compartments on and/or in the individual cells ~~[at least first fluorescent reporter molecule]~~.

46. (Currently amended) The machine readable storage medium of claim 45, wherein the creating a mask of each of the two or more cellular compartments of interest on and/or in the individual cells comprises creating a cell membrane mask from the fluorescent signals from the fluorescent reporter molecules that report on each of the two or more cellular compartments on and/or in the individual cells ~~[at least third fluorescent reporter molecule]~~.

47. (Currently amended) The machine readable storage medium of claim 46, wherein the intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest ~~[at least second fluorescent reporter molecule]~~ within the cytoplasmic mask and the cell membrane mask on and/or in the individual cells is determined.

48. (Currently amended) The machine readable storage medium of claim 44, wherein the creating a mask of each of the two or more cellular compartments of interest on and/or in the

individual cells comprises creating a cytoplasmic mask from the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest [at least second fluorescent reporter molecule].

49. (Currently amended) The machine readable storage medium of claim 48, wherein the creating a mask of each of the two or more cellular compartments of interest on and/or in the individual cells comprises creating a cell membrane mask from the fluorescent signals from the fluorescent reporter molecules that report on each of the two or more cellular compartments on and/or in the individual cells [at least third fluorescent reporter molecule].

50. (Currently amended) The machine readable storage medium of claim 49, wherein the intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest [at least second fluorescent reporter molecule] within the cytoplasmic mask and the cell membrane mask on and/or in the individual cells is determined.

[51. (Canceled) The machine readable storage medium of claim 44, wherein the creating a mask of each of the two or more cellular compartments of interest on and/or in the individual cells comprises creating a cytoplasmic mask from the fluorescent signals from the at least third fluorescent reporter molecule].

[52. (Canceled) The machine readable storage medium of claim 51, wherein the cell possess the at least fourth fluorescent reporter molecule and wherein the creating a mask of each of the two or more cellular compartments of interest on and/or in the individual cells comprises creating a cell membrane mask from the fluorescent signals from the at least fourth fluorescent reporter molecule.]

[53. (Canceled) The machine readable storage medium of claim 52, wherein the intensity of the fluorescent signals from the at least second fluorescent reporter molecule within the cytoplasmic mask and the cell membrane mask on and/or in the individual cells is determined.]

C2  
cont

54. (Currently amended) The machine readable storage medium of claim 47, wherein the procedures further comprise determining a ratio of integrated intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest [at least second fluorescent reporter molecule] between the cytoplasmic mask and the cell membrane mask on and/or in the multiple cells.

55. (Currently amended) The machine readable storage medium of claim 50, wherein the procedures further comprise determining a ratio of integrated intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest [at least second fluorescent reporter molecule] between the cytoplasmic mask and the cell membrane mask on and/or in the multiple cells.

[56. (Canceled) ~~The machine readable storage medium of claim 53, wherein the procedures further comprise determining a ratio of integrated intensity of the fluorescent signals from the at least second fluorescent reporter molecule between the cytoplasmic mask and the cell membrane mask on and/or in the multiple cells.~~]

57. (Currently amended) The machine readable storage medium of claim 44, wherein the creating a mask of each of the two or more cellular compartments of interest on and/or in the individual cells comprises creating an endoplasmic reticulum mask from the fluorescent signals from the fluorescent reporter molecules that report on each of the two or more cellular compartments on and/or in the individual cells [at least third fluorescent reporter molecule].

58. (Currently amended) The machine readable storage medium of claim 57, wherein the creating a mask of each of the two or more cellular compartments of interest on and/or in the individual cells comprises creating a Golgi apparatus mask from the fluorescent signals from the fluorescent reporter molecules that report on each of the two or more cellular compartments on and/or in the individual cells [at least fourth fluorescent reporter molecule].

59. (Currently amended) The machine readable storage medium of claim 58, wherein the intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest [at least second fluorescent reporter] within the endoplasmic reticulum mask and the Golgi apparatus masks on and/or in the individual cells is determined.

60. (Currently amended) The machine readable storage medium of claim 59, wherein the procedures further comprise determining a ratio of integrated intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest [at least second fluorescent reporter molecule] between the endoplasmic reticulum mask and the Golgi apparatus mask on and/or in the multiple cells.

61. (Previously added) The machine readable storage medium of claim 30, wherein the cellular macromolecule of interest is a protein.

62. (Currently amended) The machine readable storage medium of claim 30, wherein the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest [at least second fluorescent reporter molecule] comprises a fluorescently labeled antibody.

63. (Previously added) The machine readable storage medium of claim 30, wherein the multiple cells are fixed cells.

64. (Currently amended) The machine readable storage medium of claim 30, wherein the intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest [at least second fluorescent reporter molecule] within the mask of each of the two or more cellular compartments of interest on and/or in the individual cells in response to contacting the cells at the first time point with the test stimulus is compared to the intensity of fluorescent signals of the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest [at least second fluorescent reporter molecule] within the mask of each of the two or more cellular

*cancel*  
compartments of interest on and/or in the individual cells in response to contacting the cells  
with the test stimulus from at least the second time point.

---

65. (Previously added)

multiple cells are live cells.

The machine readable storage medium of claim 64, wherein the